



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/537,487

04/04/2006

Akira Nakada

052664

3472

38834 7590 06/18/2007
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER

NGUYEN, HUNG

ART UNIT

PAPER NUMBER

2851

MAIL DATE

DELIVERY MODE

06/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

TH

Office Action Summary

Application No.

10/537,487

Applicant(s)

NAKADA ET AL.

Examiner

Hung Henry V. Nguyen

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/3/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/3/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawings submitted 6/3/05 are informal drawings. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

Specifically, regarding claims 10 and 22, the limitations in the parentheses (for example: "when length is taken as a unit") render the claim indefinite because it is unclear whether these limitations are part of the claimed invention.

Furthermore, in claim 10, the recitation of “relation as described above” is vague. It is not clearly understood what described relation the applicant refers to?

Claim 4 recites the limitation "said substrate-taking imaging device" in line 5. There is insufficient antecedent basis for this limitation in the claim.

As to claims 10 and 21, the recitation of “an accurate positioning stage” (see line of claim 10) and “an ultraaccurate positioning stage” (see line 2 of claim 20) render the claims indefinite. The meaning of the terms ‘accurate’ and “ultraaccurate” is vague and not clearly defined.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. As best the claimed subject matters are understood (see rejection under 35 U.S.C. 112, second paragraph, *supra*). Claims are anticipated by reference.

7. Claims 1-4, 10-12 and 14-22 are rejected under 35 U.S.C. 102(b) as clearly anticipated by Saeki Masaru (JP-11-045851).

With respect to claims 1-4, 11-12, and 14-15, Saeki discloses an exposure apparatus and corresponding method comprising all of the limitations of the instant claims including an exposure machine (11, 12, 14) for performing processing for extracting feature points from image data obtained by photographing a substrate (w) to be exposed, the substrate having been pretreated in a given manner, and performing processing for detecting amounts of deviations

Art Unit: 2851

from comparison of results of the extraction of features points and design pattern data to be exposed, and performing processing for modifying shapes of images in the design pattern data using results of the processing amounts of deviations and causing an exposed image generator (see figure 4) for producing the images obtained by results of the processing for modifying shapes of image as an exposure pattern (see abstract and figure 1).

As to claims 16-17, Saeki further disclose on the basis of measured distortion, correction corresponding to the distortion is added to design data to be displayed on a displayed means (see abstract).

With respect to claims 18-20, Saeki discloses the exposure machine being a reduction exposure system, a proximity exposure system and a magnified projection exposure system (see figure 4).

As to claims 10 and 21-22, Saeki Masaru teaches an accurate positioning stage (14c) for controlling the position of the exposure substrate as recited in the mentioned claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

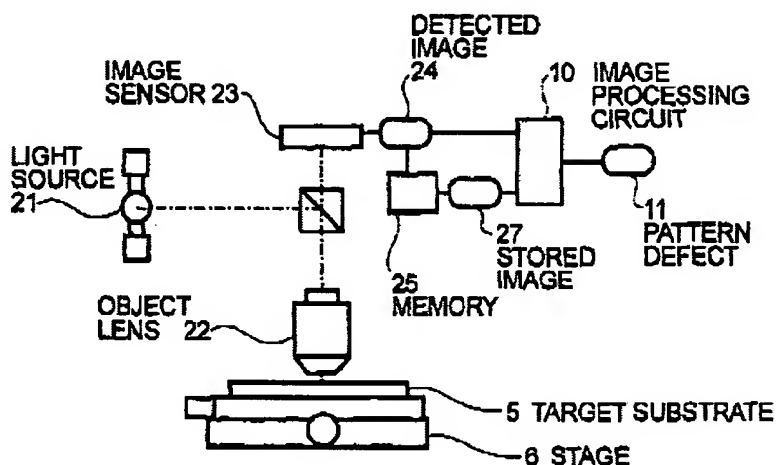
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugaya et al (U.S.Pat. 5,680,200) in view of Hiroi et al (U.S.Pat. 7,049,587).

With respect to claims 14-23, Sugaya et al discloses an exposure machine having an accurate positioning stage (WS) for producing an arbitrary exposure pattern according to input of an image signal, the substrate (W) having a photosensitive material applied to the top surface of the substrate (see col.1, lines 40-41) and having been pretreated in a given manner, the exposure machine comprising a pattern transferring system comprising substantially all of the limitations as set forth in the instant claim such as: a projection optical system (16) adopts a reduction projection optical system or proximity exposure system or a magnified projection exposure system; an ultraaccurate positioning stage (WS) for controlling the position of the substrate (W) and has a non-resonant ultrasonic motor as a driving mechanism. Sugaya (figure 1) further teaches an inspection apparatus (500) having image pickup device and image processing system for detecting the deviation of the patterned image formed on the substrate (W). Sugaya does not expressly disclose the pattern transfer system having a substrate image taking image device and image signal creating device, as recited in the instant claims. Hiroi et al discloses an exposure machine having means (6) for holding a substrate (5) to be exposed and for producing an arbitrary exposure pattern according to input of an image signal, the substrate having been pretreated in a given manner, the exposure machine having a pattern transfer system, comprising all of the structures set forth in the instant claims such as: an optics (22) for guiding light reflected from the exposed substrate (5) into a substrate image taking imaging device (23), the substrate imaging taking imaging device (23) photographing the light reflected from the substrate via the optics (22) and gaining the photographed light as image data, an image signal creating device (10) for creating the image signals, a pattern transfer controller (100) for receiving the image data output from the substrate image taking imaging device and outputting the image data

Art Unit: 2851

to the image signal creating device and a design pattern data storage device (25, 27) having a function of transferring design pattern data to the pattern transfer controller wherein the pattern transfer controller has a function of performing processing for extracting feature points from the image data obtained from the substrate image taking imaging device and performing processing for detecting amounts of deviations from results of the extraction of feature points and from the design pattern data, performing processing for modifying the shapes of the images in the design pattern data using results of the processing for detecting amounts of deviations and using the images obtained by results of the processing for modifying shapes of image as image data for the image signal creating device.



Hiroi et al further teach a transmissive image display device (209) and the substrate image taking imaging device (23) placed in a position where light reflected from the substrate (5) being photographed through the transmissive image (209) which is a transmissive liquid crystal display. In view of such teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Sugaya et al and Hiroi et al to obtain the invention as specified in the instant claims of the present invention. It would

Art Unit: 2851

have been obvious to a skilled artisan to employ the inspection system of Hiroi into the exposure device of Sugaya et al for the purpose of accurately detecting the distortion of the images formed on the substrate for producing a corrected data and thus the quality of the patterns to be printed on the substrate is greatly improved.

As to claims 1-13, the claimed method is seen to be inherent teachings in existence of the above apparatuses.

Prior Art Made of Record

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mitsui (U.S.Pat. 6,985,626) discloses a system and method for pattern evaluation.

Idekawa (JP-05113406) discloses inspecting apparatus for inspecting a defect of wafer.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V. Nguyen whose telephone number is 571-272-2124. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on 571-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2851

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Hung Henry V Nguyen
Primary Examiner
Art Unit 2851

hvn
6/8/07